

## Attachment “1”



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### LEGAL DEPARTMENT

Duke Energy submits to the Indiana Department of Environmental Management (“IDEM”) this legal analysis to respond to the interpretation of the closure-in-place performance standard set forth in IDEM’s December 17, 2018, cover letter transmitting Requests for Additional Information (“RAI”) related to Duke Energy’s plans for closure of the CCR surface impoundments at the Cayuga, Gallagher, Gibson, and Wabash River Generating Stations, and in the RAI themselves. Duke Energy looks forward to IDEM’s expeditious approval of the closure plans, which will allow the company to close the subject coal combustion residuals (“CCR”) units in a manner that continues to protect human health and the environment in accordance with federal and state law. As described below (and detailed in Duke Energy’s technical responses), the closure plans meet, and in some cases exceed, the closure-in-place performance standard set out in the final Disposal of Coal Combustion Residuals From Electric Utilities CCR rule, 80 Fed. Reg. 21302 (Apr. 17, 2015) (“CCR rule”).

### EXECUTIVE SUMMARY

Duke Energy disagrees with IDEM staff’s proffered definition of “infiltration,” as that term is used in the CCR rule’s closure-in-place performance standard. First, a review of the regulatory language and preamble guidance explaining the closure-in-place requirements indicate that the performance standard is intended to address the function and integrity of the final cover system, not groundwater quality—an issue that is fully addressed under the CCR rule’s corrective action provisions. Second, EPA’s HUMAN AND ECOLOGICAL RISK ASSESSMENT OF COAL COMBUSTION RESIDUALS (Dec. 2014) [hereinafter “RISK ASSESSMENT”], which was developed to characterize the risks associated with CCR disposal practices to aid in development of the final CCR rule, clearly indicates that EPA intends for the term “infiltration” as used in the CCR rule (as is the case in all other contexts)—and specifically in the closure-in-place performance standard—to address the post-closure passage of liquids through the top of the cap. It is this post-closure infiltration of precipitation and surface run-on (not horizontal migration under the cap) that must be “control[led], minimize[d] or eliminate[d], to maximum extent feasible.” The RISK ASSESSMENT and EPA’s discussions thereof in the CCR rule’s preamble indicate that the agency was well aware that some CCR units existed where a portion of the ash was in contact with groundwater; yet, it chose not to require closure by removal of these impoundments or to establish separate performance standards specifically applicable to such units. To the contrary, EPA recognized it was unlikely that most facilities would close their CCR units by removal

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“given the expense and difficulty of such an operation.” 80 Fed. Reg. at 21412. Instead, EPA recognized that the CCR in these units is “typically destined for permanent entombment when the unit is eventually closed.” 75 Fed. Reg. 35128, 35177 (June 21, 2010). Third, recent statements in EPA’s proposed Amendments to the National Minimum Criteria rule (“Proposed Phase 1 Amendments”), 83 Fed. Reg. 11584 (Mar. 15, 2018), evince that the closure-in-place performance standard is intended to limit the infiltration of precipitation and surface drainage into the CCR underlying the cap. Fourth, EPA statements makes clear that under certain circumstances, including when waste is in contact with groundwater, the closure-in-place option may be necessitated.

It is important to note that groundwater modeling demonstrates that the most effective action to address groundwater impacts is to remove the free-standing water from the basin, which is what Duke Energy will do prior to installing the final cover system. In addition, work is currently underway to assess a suite of potential corrective measures to remediate releases and restore affected areas. It is under these provisions of the CCR rule (*i.e.*, Sections 257.96-.98) and not under Section 257.102 that site-specific conditions, including saturated ash, affecting groundwater quality must be considered. The cumulative effects and total environmental impact of closure by removal on noise, safety, traffic, and the community are significant. At the same time, this closure option will not result in additional, measurable environmental benefits. For these reasons, the closure plans comply with the requirements of the CCR rule, including its closure-in-place performance standard, and should be promptly approved.

## ANALYSIS

### **I. The Closure-With-CCR-In-Place Performance Standard Is Intended To Address The Integrity Of The Final Cover System, Not Groundwater Quality**

In their cover letter to the RAI dated December 17, 2018, IDEM staff notes that the closure approach proposed by Duke Energy “leaves waste in place either in contact or in potential contact with ground water.” Staff then cites to 40 C.F.R. § 257.102(d)(1), which sets out the closure performance standard applicable to the final cover system in a cap-in-place closure, and sets forth its position that these closure performance standards are somehow applicable to the horizontal movement of liquids underneath the final cover system. As Duke Energy explained to IDEM in Duke Energy’s analysis dated November 27, 2017, attached hereto and incorporated herein by this reference, the interpretation IDEM staff proffers is inconsistent with the regulatory text, the overall framework established in the CCR rule, and the purpose of the closure-in-place

performance standard. By its plain language, the performance standard exists to ensure the effectiveness and integrity of the cap, not to address any CCR *beneath* the final cover system that may be in contact with groundwater upon completion of closure. The language of Section 257.102(d)(1)(i) cited by IDEM requires only the reduction of water infiltration into ash (from *above* the cap)—not the elimination of any contact between the two *below* the cap.

IDEM staff reads 40 C.F.R. § 257.102(d)(i)'s requirement to “[c]ontrol, minimize, or eliminate post-closure infiltration of liquids” to address CCR *beneath* the final cover system of the closed unit. But IDEM staff misconstrues the regulation. As used in Section 257.102(d) and throughout the CCR rule, infiltration does not “come from any direction”; rather, it is limited to liquids passing through the top of the final cover system.

A. Analysis of the CCR Rule's Regulatory Text

Section 257.102(d) contains the “[c]losure performance standard when leaving CCR in place,” and all of its provisions in paragraphs (d)(1), (2), and (3) are intended to address the design, installation, and performance of the cap, not what happens underneath it or groundwater contamination. Specifically, paragraph (d)(1) sets out general requirements to address: (i) infiltration of liquids *through the cap*; (ii) impoundment of liquids *on top of the cap*; (iii) stability “of the final cover system”; (iv) “minimiz[ation] of the need for further maintenance of the CCR unit”; and (v) completion of installation “consistent with recognized and generally accepted good engineering practices.” Considered together, these five qualitative requirements make clear that the purpose of paragraph (d)(1) is to ensure that the final cover system is properly designed, installed, and maintained to prevent the impoundment of liquids on top of and the infiltration of liquids through the cap and to ensure the stability and integrity of the final cover system.

Paragraph (d)(2) goes further by detailing precisely what actions owners and operators must take “prior to installing the final cover system” to ensure that the final cover system functions properly and maintains its integrity consistent with recognized and generally accepted good engineering practices, as required under paragraphs (d)(1)(iii) through (v): (i) eliminate free liquids, and (ii) stabilize the remaining wastes “to support the final cover system.”

Finally, paragraph (d)(3) sets out the precise technical requirements that must be met to meet the qualitative requirements set out in paragraphs (d)(1)(i)-(ii).

Specifically, (d)(3)(i) contains the design criteria of the final cover system setting out (A) permeability requirements ( $1 \times 10^{-5}$  cm/sec), (B) measures to reduce infiltration ( $\geq 18$ " of earthen material), (C) measures to reduce erosion ( $\geq 6$ " of earthen material), and (D) measures to maintain the integrity of the final cover system. Thus, consideration of the closure-in-place performance standard in its entirety makes clear that it is intended to ensure (i) against the infiltration of liquids *through the top* of the cap; (ii) the impoundment of liquids, sediment, and slurry *on top of* the cap; and (iii) the integrity of the final cover system. The performance standard set out in Section 257.102(d) does not address, much less preclude, CCR beneath the final cover system from contacting groundwater at the completion of closure. The fact that EPA provides detailed criteria in the rule regarding control of infiltration from above but says nothing about lateral groundwater movement demonstrates that EPA intended the term "infiltration" in (d)(1)(i) to refer only to the passage of liquids through the cap from above.

Furthermore, the requirement that a final cover system "[p]reclude the probability of future impoundment of water, *sediment*, or *slurry*," 40 C.F.R. §257.102(d)(1)(ii) (emphasis added), refers to the impoundment of water, sediment, and slurry *on top of* the final cover system, not underneath it. The definitions of "sediment" and "slurry" show that the standard does not address the lateral migration of groundwater underneath the final cover system. Although neither "sediment" nor "slurry" is defined under the CCR rule, the common definition of "sediment" is "[f]inely divided solid material that settles *to the bottom* of a liquid," and "[t]he deposition of such material *onto the surface* beneath this water or air," WEBSTER'S II NEW COLLEGE DICTIONARY 1022 (3d ed. 2005) (emphasis added). And "slurry" is commonly defined as "[a] thin mixture of a liquid, esp[ecially] water, and any of several finely divided substances, [such] as cement, plaster of Paris, or clay particles." *Id.* at 1065. EPA's use of these terms along with the term "water" demonstrates that the standard is intended to preclude the deposition of materials on top of the cap of a closed unit, whether brought by water or other elements. The words indicate that the standard does not address the lateral migration of groundwater underneath the final cover system, as proffered by IDEM staff. The preamble discussion of what the closure plan requires confirms this: "The final grades of the final cover system should promote *surface water run-off and minimize erosion*," 80 Fed. Reg. at 21,411 (emphasis added), evincing that this requirement does not pertain to groundwater.

IDEM staff's interpretation that the phrase "releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere" contained in Section 257.102(d)(1)(i) "includes releases to groundwater" is flawed. Paragraph (d)(1)(i)

of Section 257.102 speaks to preventing “to the maximum extent feasible,” the post-closure infiltration of liquids into the waste (i.e., through the final cover system) to prevent releases of CCR or contaminated runoff “to the ground or surface waters or the atmosphere.” Again, the performance standard is speaking to the performance of the final cover system, which, as discussed above, is the central feature of the closure-in-place option, and its effectiveness in preventing liquids from infiltrating the cover and causing CCR closed in place from being released or leaching to the ground, surface waters, or the atmosphere. Critically, the standard does not mention groundwater, or even suggest that the standard cannot be met if CCR is in contact with groundwater. When the CCR rule refers to the term groundwater elsewhere in the rule, it specifically uses the single word—“groundwater.” But in paragraph (d)(1)(i), contrary to the position of IDEM staff, the CCR rule’s use of the definite article “the” before “ground” underscores that the standard is referring to releases—such as contaminated run-off from the cover system—to the ground or surface waters. There is no mention of “groundwater.” Accordingly, it is difficult to understand the basis of staff’s interpretation.

B. Analysis of the CCR Rule’s Preamble and Supporting Documents

Although the foregoing analysis of the regulatory text makes clear that the requirement to “control, minimize or eliminate . . . post-closure infiltration” strictly deals with passage of liquids through the top of the final cover system, assuming arguendo the language is ambiguous, the preamble to the CCR rule and EPA supporting documents confirm EPA’s intent that the closure-in-place performance standard addresses the integrity of the final cover system rather than groundwater quality.

A preamble may be used to help inform the proper interpretation of an ambiguous text. *Tex. Children’s Hosp. v. Azar*, 315 F. Supp. 3d 322, 334 (D.D.C. 2018). In fact, a preamble contributes to a rule’s general understanding. *Nat’l Wildlife Fed’n v. EPA*, 286 F.3d 554, 569 (D.C. Cir. 2002), and “although a preamble may not control the meaning of the regulatory text, it may serve as a source of evidence concerning contemporaneous agency intent.” *Wyoming Outdoor Council v. United States Forest Serv.*, 165 F.3d 43, 53 (D.C. Cir. 1999).

On page 21413 of the CCR rule’s preamble, EPA explains that the requirement to “control, minimize or eliminate, to the maximum extent practicable, post-closure infiltration of liquids into the waste” requires owners and operators to

ensure that in designing a final cover for a CCR unit they account for any condition that may cause the final cover system not to perform as designed. This could include accounting for site conditions that may increase the likelihood that a cover would be *susceptible to desiccation cracking or settlement cracking*. Under this performance standard, if the cover system results in liquids infiltration or releases of leachate from the CCR unit, the final cover would not be an appropriate cover.

(Emphasis added.) The foregoing language makes clear that the central focus of the closure performance standard when leaving CCR in place is not on groundwater quality but instead on the minimization of the post-closure infiltration of liquids through the top of the final cover system, which could damage its integrity through such things as desiccation cracking and settlement cracking. Indeed, it was precisely the risk presented by “*continued infiltration of precipitation through inappropriately closed CCR impoundments*” that EPA sought to address when it proposed making CCR surface impoundments that had ceased receiving new wastes prior to the effective date subject to the rule. 75 Fed. Reg. at 35177.

This makes sense, because EPA addresses groundwater protection when cap-in-place closure occurs in entirely different sections of the CCR rule: Sections 257.104 (post-closure care requirements) and 257.96-.98 (groundwater monitoring and corrective action). These provisions, which protect groundwater, including any groundwater that may come into contact with ash, would be superfluous if the CCR rule precluded groundwater from touching ash following closure. The CCR rule’s closure criteria at Section 257.102 are intended to address just that—closure. To the extent groundwater contamination needs to be addressed, this is accomplished by the CCR rule’s post-closure care maintenance requirements at Section 257.104, which require owners and operators to maintain the integrity and effectiveness of the final cover system, maintain the groundwater monitoring system, monitor the groundwater for a minimum of 30 years, and, if appropriate, implement corrective action measures as required under Sections 257.96-.98. As a result, if CCR in a closed-in-place impoundment is in contact with groundwater, releases to groundwater—including any potential releases from CCR contained in groundwater—will be detected by the unit’s groundwater monitoring system and will be addressed, as necessary, through the CCR rule’s corrective action program.

EPA's RISK ASSESSMENT provides clear evidence that the term "infiltration" is intended by EPA to address only the passage of liquids through the top of the final cover system. The Uncertainty Analysis attached as an appendix to the RISK ASSESSMENT presents the approach EPA used to evaluate uncertainties associated with the modeling of pre-closure and post-closure releases for surface impoundments. The agency used the results of this analysis to draw conclusions about the potential for this uncertainty to affect the risk results of the probabilistic analysis. In discussing post-closure releases, EPA notes the following: "The removal of free liquids and capping during closure reduces the hydraulic head and the rate of contaminant migration. After closure is complete, *infiltration through the impoundments is driven only by percolation of incident precipitation through the cap.*" RISK ASSESSMENT app. K, at K-1 (emphasis added). And when estimating flux and leaching duration, EPA specifically used "*infiltration rates calculated with precipitation data from the most representative climate center, to calculate site-based values for each landfill.*" RISK ASSESSMENT app. I, at I-9 (emphasis added).

Moreover, the RISK ASSESSMENT reveals that EPA was well aware that "some CCR WMUs [waste management units] come in direct contact with the water table for at least part of the year." RISK ASSESSMENT, at 5-10. EPA explains in the RISK ASSESSMENT that its "probabilistic analysis limited the depth of every WMU to the boundary of the water table" in light of the uncertainty regarding the level of risk presented when "[m]odeling WMUs below the water." *Id.* In the end, EPA concluded that because "there is potential for both higher and lower risks than modeled, this uncertainty is unlikely to have an appreciable effect on the principal findings of the probabilistic analysis." *Id.*, at 5-11. Thus, EPA's RISK ASSESSMENT in support of the CCR rule makes abundantly clear that EPA was well aware of the existence of CCR surface impoundments with ash in contact with groundwater, yet it chose neither to require that these impoundments be closed by removal or to establish a set of performance standards specific to such units. Instead, EPA concluded in the final CCR rule that both closure options, if properly performed, are equally protective. 80 Fed. Reg. at 21,412.

Conspicuously, EPA did not mandate excavation of, or create any separate set of performance standards for, impoundments containing groundwater-saturated CCR. Surely, when EPA desires to impose a requirement, it knows how to do so. *See e.g.*, § 257.101(b)(1) (requiring that within six months of determining that an existing CCR surface impoundment has not demonstrated compliance with the location standard for placement above the uppermost aquifer, the owner or operator must close the unit). The fact that the closure performance standard under Section 257.102 in no way speaks

to the issue of ash being in contact with groundwater indicates that EPA did not intend for this to be a factor when determining the method of closure under the CCR rule. Instead, to the extent this issue exists, it will be addressed later in corrective action. IDEM should refrain from impermissibly conflating the CCR rule's closure requirements with corrective action. Under the CCR rule, an owner or operator must close the CCR unit by meeting the applicable performance standards set out in Section 257.102, *then*, if groundwater is contaminated such that the groundwater protection standards are exceeded, the owner must implement corrective action pursuant to separate and distinct provisions of the rule—Sections 257.96-.98.

EPA's guidance posted to the agency's Web site underscores that EPA did not intend the performance standard to eliminate cap-in-place as a closure option when ash is in contact with groundwater. IDEM's statements in its December 17, 2018 cover letter that "'infiltration' can come from any direction" and "ground water infiltration into closed-in-place CCR constitutes 'post-closure infiltration of liquids into the waste'" impermissibly rely on guidance that EPA long ago revised. EPA last revised its guidance on July 18, 2018, see <https://www.epa.gov/coalash/relationship-between-resource-conservation-and-recovery-acts-coal-combustion-residuals-rule>, and it is entirely inappropriate to rely on earlier guidance—guidance that EPA promptly removed from its "Frequent Questions about Closure and Post-closure Care and Implementing the Final Rule Regulating the Disposal of Coal Combustion Residuals" Web page in recognition of the fact that it was wrong. EPA's currently posted guidance, which is the only relevant post-rule guidance, clarifies that "[b]oth clean closure and closure with waste in place can be equally protective," and the CCR rule "does not require an owner or operator to use one closure option over the other" if the performance standards are met, which, as described in Duke Energy's technical responses and in the closure plans themselves, Duke Energy will achieve. The change in guidance leaves no room for misunderstanding—the performance standards do not restrict the type of closure available when ash intersects groundwater. Considering that EPA anticipated that the majority of surface impoundments will be closed under the closure-in-place option, 80 Fed. Reg. at 21,412, EPA surely did not intend the performance standard to eliminate cap-in-place as a closure option anytime ash may be in contact with groundwater. As EPA explains in *current* guidance, "[p]rovided the requirements of the CCR rule as well as the [Clean Water Act] are met, the CCR rule's closure in place option can be implemented consistent with protection of groundwater and surface water resources," which is precisely what Duke Energy is doing under its closure plans. <https://www.epa.gov/coalash/relationship-between-resource-conservation-and-recovery-acts-coal-combustion-residuals-rule>.



C. Subsequent EPA Statements Belie IDEM's Interpretation

Subsequent statements made by EPA—statements that post-dated the no longer effective guidance on which IDEM relies—further support Duke Energy's interpretation of Section 257.102(d)(1). On March 15, 2018, EPA promulgated its Proposed Phase 1 Amendments. In discussing the closure-in-place performance standard, EPA made the following statement: "A primary purpose of a final cover system is to encourage *free surface drainage* in order **to limit infiltration from precipitation into the underlying waste.**" *Id.* at 11606 (emphasis added). Thus, in a single sentence, EPA contradicts IDEM staff's proffered interpretation of the meaning of "infiltration," as that term is used to discuss the CCR rule's closure-in-place performance standard at Section 257.102(d)(1)(i). EPA's references to "free surface drainage" for the purpose of "limit[ing] infiltration" "from precipitation" "into the underlying waste" when discussing the "primary purpose" of the "final cover system" makes abundantly clear that the intent of the standard is to prevent the downward entry of rainfall into the ground surface; it has nothing to do with the lateral migration of contaminants through groundwater underneath the cap, which is an issue to be addressed under the CCR rule's corrective action provisions.

And on that same page, EPA confirms that the requirement that a final cover system "[p]reclude the probability of future impoundment of water, sediment, or slurry" refers to the impoundment of water, sediment, and slurry on top of the final cover system, not underneath it: "In order to fulfill the 'free drainage' criteria set forth in § 257.102(d)(1)(ii), the geometry of the waste in the unit must allow for free drainage of all water, sediment, and slurry from any point within the CCR surface impoundment out of the breached portion of the embankment." *Id.* EPA's focus on the geometry of the unit when speaking in terms of grading and contouring to achieve "free drainage of all water, sediment, and slurry" confirms that EPA intends for the performance standard to ensure against the impoundment of liquids and materials *on top of* the final cover system. *See id.*, n. 40 ("The owner or operator must first breach and dewater the CCR unit, allowing for free drainage of water, sediment, or slurry *out of the CCR surface impoundment via surface runoff*, prior to construction of the final cover system. Additionally, if the owner or operator intends to leave waste-in-place, the owner or operator must 'preclude the probability of future impoundment of water, sediment, or slurry,' per the requirements of § 257.102(d)(1)(ii).") (emphasis added).

D. Federal Agency Statements and Technical Treatises Confirm Duke Energy's Interpretation of "Infiltration"

Although not exhaustive, the following federal agency Web sites and technical treatises provide support for the meaning of "infiltration" espoused by Duke Energy:

- Environmental Protection Agency – "Water applied to the soil surface through rainfall and irrigation events subsequently enters the soil through the process of infiltration. . . . Infiltrability is a term generally used in the disciplines of soil physics and hydrology to define the maximum rate at which rain or irrigation water can be absorbed by a soil under a given condition. Indirectly, infiltrability determines how much of the water will flow over the ground surface (i.e., runoff or overland flow), terminating in lakes, streams, or rivers, and how much will enter the soil. This term can be used in the estimation of water available for downward percolation through drainage, runoff, or returned to the atmosphere by the process of evapotranspiration." <https://www.epa.gov/water-research/infiltration-models>.
- Federal Emergency Management Agency – "Infiltration is defined as the downward entry of water into the soil or rock surface (SSSA, 1975). . . . Infiltration rate is the rate at which a soil under specified conditions absorbs falling rain, melting snow, or surface water expressed in depth of water per unit time (ASCE, 1985)." [https://www.fema.gov/media-library-data/20130726-1731-25045-9495/dl\\_perc.pdf](https://www.fema.gov/media-library-data/20130726-1731-25045-9495/dl_perc.pdf).
- "Infiltrate - The process of water moving from the land surface into the soil." Fetter, C. W., *Applied Hydrogeology* (4th ed. 2001).
- "Infiltration is "the entry into the soil of water made available at the ground surface, together with the associated flow away from the ground surface within the unsaturated zone." Freeze, R.A., and Cherry, J.A., *Groundwater* (1979).

The foregoing definitions make clear that contrary to IDEM staff's stated interpretation, infiltration—both as commonly used and as used in the CCR rule—cannot "come from any direction," but, in fact, is "limited to liquids that pass through the final cover system." Accordingly, IDEM's position that "ground water infiltration into closed-in-place CCR constitutes 'post-closure infiltration of liquids into the waste,' is inapposite. Moreover, any suggestion that disposal units with waste in contact with groundwater

may not be closed in place is directly contradicted by EPA statements in the Subtitle C hazardous waste context.

## **II. Closure By Leaving Waste In Place Is Appropriate When Hazardous Contaminants Are In Contact With Groundwater**

In 1982, EPA promulgated an interim final rule establishing standards applicable to owners and operators of *hazardous* waste treatment, storage, and disposal facilities. 47 Fed. Reg. 32274 (July 26, 1982). Part of that rule addressed closure and post-closure care of surface impoundments. In the preamble to the rule, EPA explained that owners and operators have two “alternatives” for closing their surface impoundments: (1) “remove or decontaminate all wastes” (*i.e.*, close by removal), or (2) “leave the wastes in place, eliminate free liquids, stabilize the wastes, place a cap (final cover) on top of the waste, and conduct post-closure monitoring and maintenance” (*i.e.*, close by leaving the waste in place). *Id.* at 32320. These are precisely the same two closure methods allowed under the CCR rule. *Compare* 40 C.F.R. § 264.228(a) (setting out closure performance standards for hazardous waste surface impoundments), *with* 40 C.F.R. § 257.102(c),(d) (establishing closure performance standards for CCR units).

EPA expounded that if the owner or operator elects the closure-by-removal option, it must remove or decontaminate all wastes, including contaminated subsoils. *Id.* Upon completion of closure, what remains “is a storage unit leaving no hazardous constituents in the ground after closure.” *Id.* Importantly, EPA specifically goes on to explain that provided the owner or operator makes all reasonable efforts to comply with the closure plan to remove and decontaminate all residues and contaminated subsoils but finds that it is unable to comply with the closure plan because it is not able to remove or decontaminate all of the remaining contaminated saturated and unsaturated soils, it “**must close the unit under the [closure-by-leaving-waste-in-place] option and perform post-closure care.**” *Id.* (emphasis added). EPA explains that “[t]his situation is likely to occur often in the case of existing portions that do not have liners,” in which case “contamination may have migrated a considerable distance from the impoundment and possibly even entered the ground water. **This situation necessitates closure under the [closure-by-leaving-waste-in-place] alternative to minimize the rate of migration and monitor for potential ground water contamination.**” *Id.* at 32321 (emphasis added).

Five years later, in its final rule setting out interim standards for owners and operators of hazardous waste treatment, storage, and disposal facilities, 52 Fed. Reg. 8704 (Mar. 19, 1987), EPA explained that, by definition, a disposal unit “is closed with

residues and wastes remaining at the site. The goal at closure is to assure that these remaining wastes and residues are managed in a manner that protects human health and the environment.” *Id.* at 8706. Toward this end, EPA promulgated regulations requiring post-closure care for units closed by leaving waste in place. On the other hand, owners and operators of waste units undergoing closure by removal of wastes must remove or decontaminate the wastes, waste residues, contaminated liners, and soils (including contaminated groundwater). In a December 1987 letter from EPA’s Office of Solid Waste to EPA Region III clarifying issues relating to closure of interim status impoundments, the agency explained that **if the interim status surface impoundment has triggered ground-water assessment . . . and groundwater contamination is evident, clean closure is probably not a feasible option.** Memorandum from Marcia E. Williams, Director Office of Solid Waste, to Robert E. Greaves, Chief Waste Management Branch, Region III, titled Closure and Post-Closure Issues (Dec. 17, 1987) (emphasis added).

The foregoing makes clear that under those circumstances where *hazardous* waste is in contact with groundwater, capping the waste in place is entirely appropriate—in fact, may be the only “feasible option.” If closure in place is necessitated under these circumstances in the Subtitle C context, it is axiomatic that this same method of closure is appropriate under the CCR rule, which establishes performance standards for surface impoundments storing CCR—a *nonhazardous* waste.

### III. CONCLUSION

Duke Energy takes its commitment to protecting health and the environment seriously, and as discussed further in the attached technical responses, after the subject CCR units are closed pursuant to Section 257.102(d), Duke Energy will (i) conduct post-closure care in accordance with the requirements of paragraphs (b) and (c) of Section 257.104, including maintaining the integrity and effectiveness of the final cover system, maintaining the groundwater monitoring system, and monitoring the groundwater in accordance with the requirements of Sections 257.90 through 257.95; and (ii) undertake corrective action measures, as appropriate, in accordance with the requirements of Sections 257.96 through 257.98 until such time the groundwater meets the applicable groundwater protection standards and it is appropriate to cease monitoring under the CCR rule.